

Electrical Safe Work Practices *PPE UPDATE*

Review of new SBMS 1.5.0 And NRTL

Electrical Safe Work Practices *PPE UPDATE*

OBJECTIVES:

Review

- **New SBMS standard, 1.5.0, Appendix VIII**
- **Basic Quadrants**
- **The “Royal” exception**
- **Motor Control Centers - Controls**
- **Getting Plugged In**
- **Personnel Protective Clothing & Equipment**
- **Precautions**

Electrical Safe Work Practices

PPE UPDATE

- BNL LESC has reviewed the hazards of activities listed in the NFPA 70E table and has revised the hazard levels.

This is listed in the revised SBMS 1.5.0, Appendix VIII

This is based on the footnotes to the tables.

- If the device to be operated has a sticker listing Hazard / Risk Category and required PPE,

utilize the Hazard / Risk Category and the PPE listed

Electrical Safe Work Practices PPE UPDATE



WARNING

ARC FLASH HAZARD

HAZARD/RISK CATEGORY 2

8 Cal/cm² Arc Flash Boundary

REQUIRED PERSONAL PROTECTIVE EQUIPMENT

COTTON UNDER GARMENTS	LEATHER GLOVES
HARD HAT w/ FACE SHIELD	LEATHER SHOES
HEARING PROTECTION	SAFETY GLASSES
FR LONG SLEEVE SHIRT & PANTS	1 or 2 LAYERS

Calculation No.:



WARNING

ARC FLASH HAZARD

HAZARD/RISK CATEGORY 4

40 Cal/cm² Arc Flash Boundary

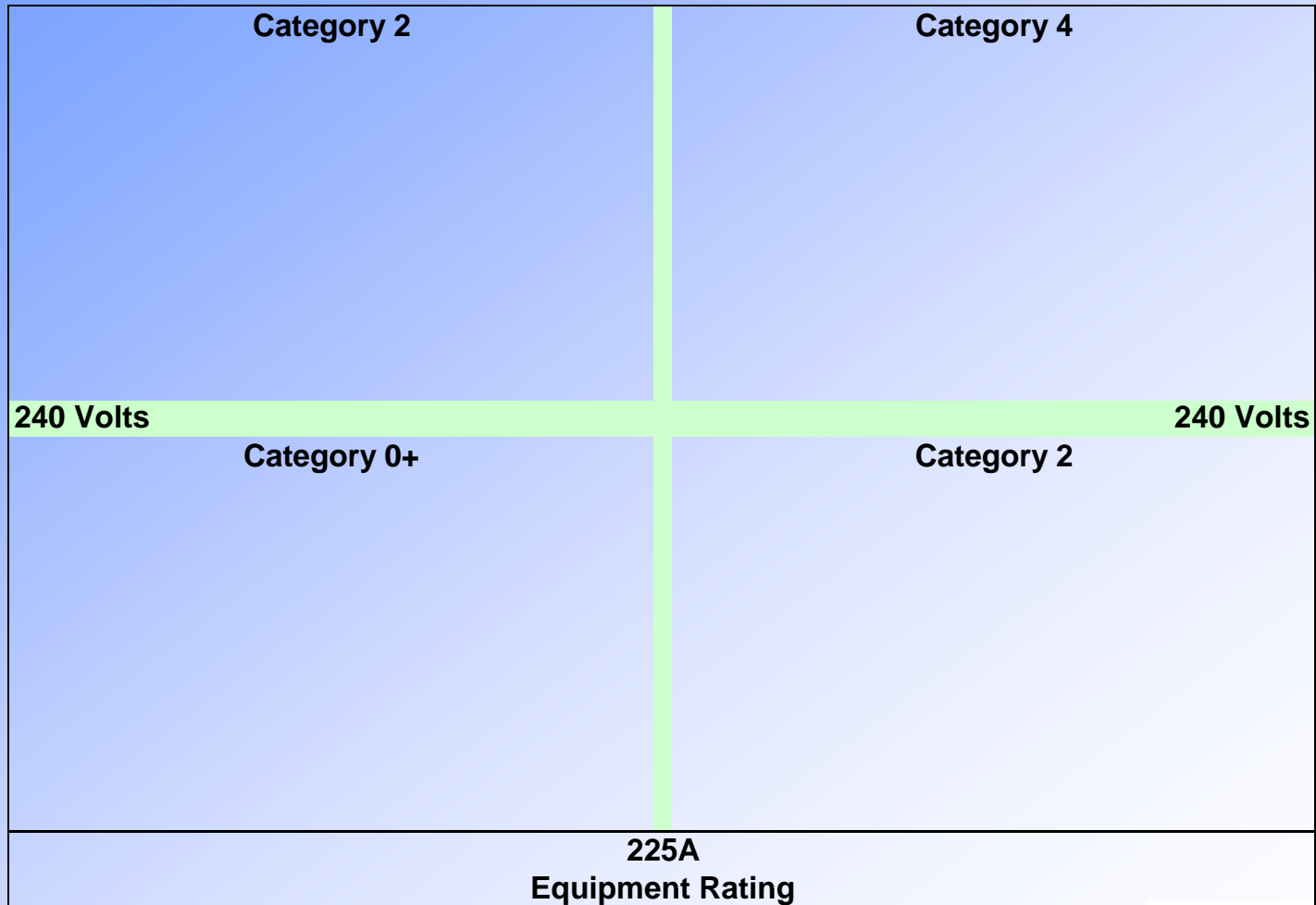
REQUIRED PERSONAL PROTECTIVE EQUIPMENT

COTTON UNDER GARMENTS	LEATHER GLOVES
FLASH SUIT w/ HOOD & HARD HAT	LEATHER SHOES
HEARING PROTECTION	SAFETY GLASSES
FR LONG SLEEVE SHIRT & PANTS	2 or 3 LAYERS

Calculation No.:

Electrical Safe Work Practices

PPE UPDATE



Electrical Safe Work Practices PPE UPDATE

- Equipment Rating



Electrical Safe Work Practices *PPE UPDATE*

- Equipment Rating



Electrical Safe Work Practices PPE UPDATE

- Equipment Rating



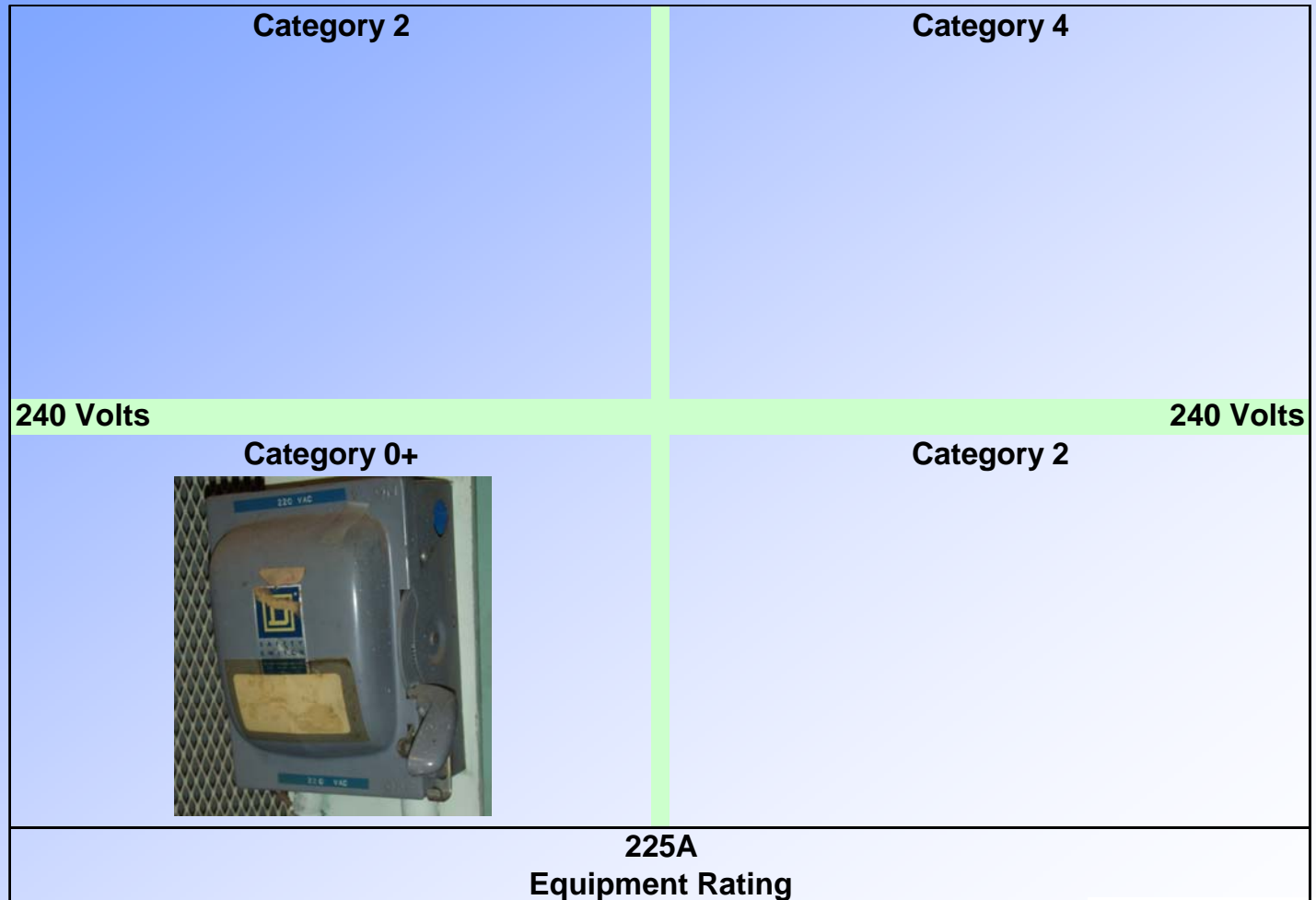
Electrical Safe Work Practices PPE UPDATE

- 220V
- 30A



Electrical Safe Work Practices

PPE UPDATE

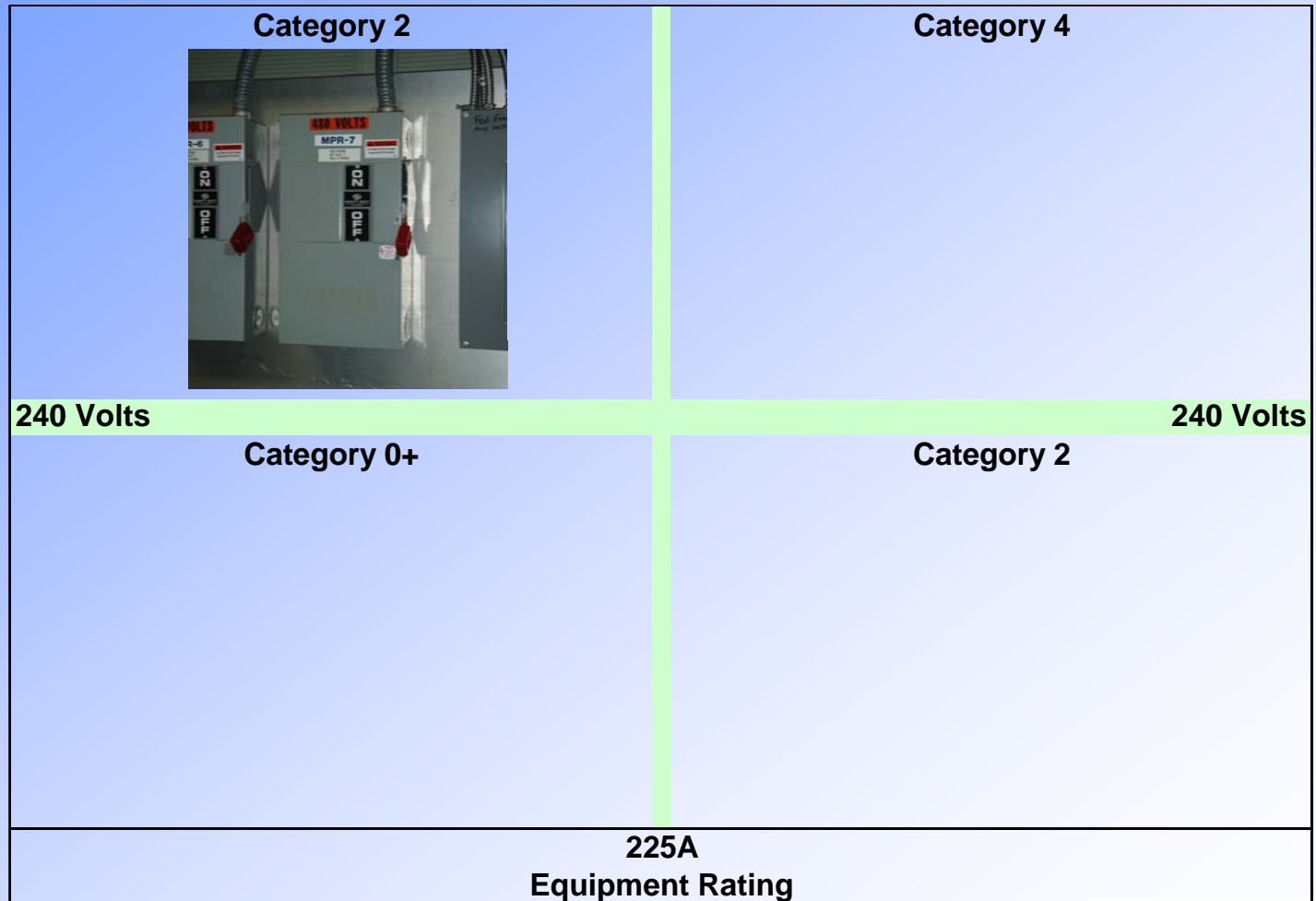


Electrical Safe Work Practices PPE UPDATE

- 480V
- 60A



Electrical Safe Work Practices PPE UPDATE



Electrical Safe Work Practices

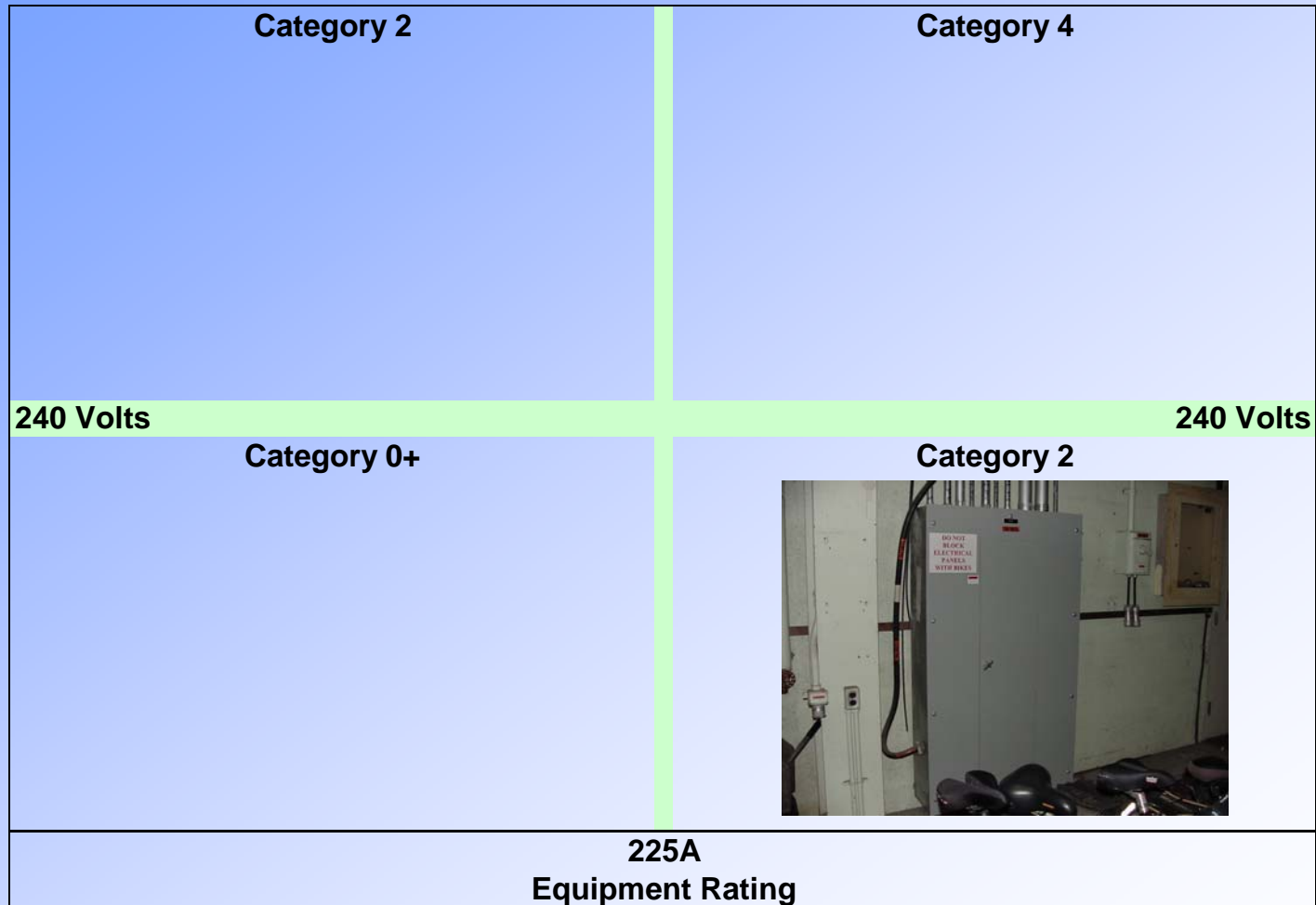
PPE UPDATE

- 208V
- 600A



Electrical Safe Work Practices

PPE UPDATE



Electrical Safe Work Practices

PPE UPDATE

480V

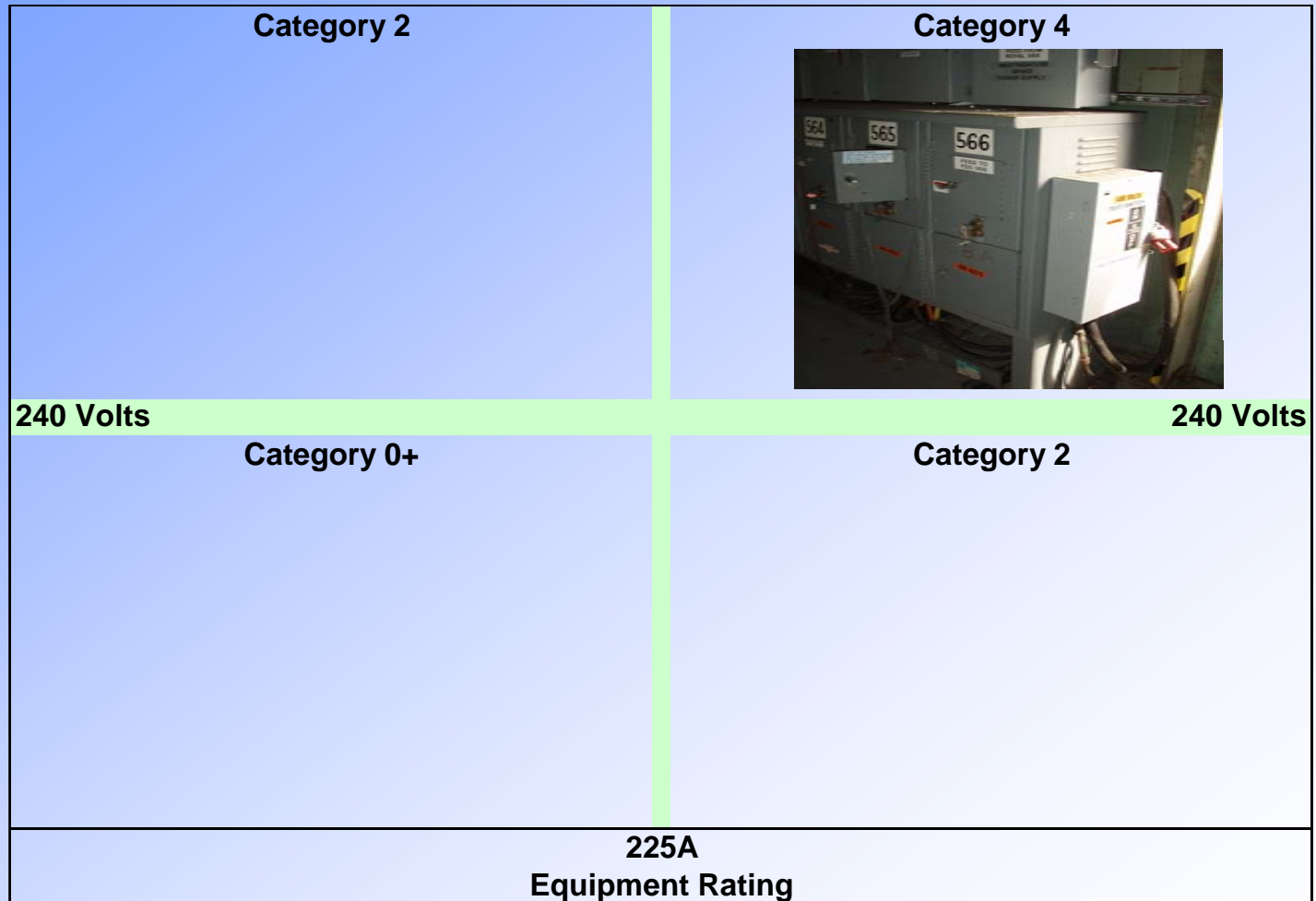
60A Switch

800A Royal



Electrical Safe Work Practices

PPE UPDATE



Electrical Safe Work Practices

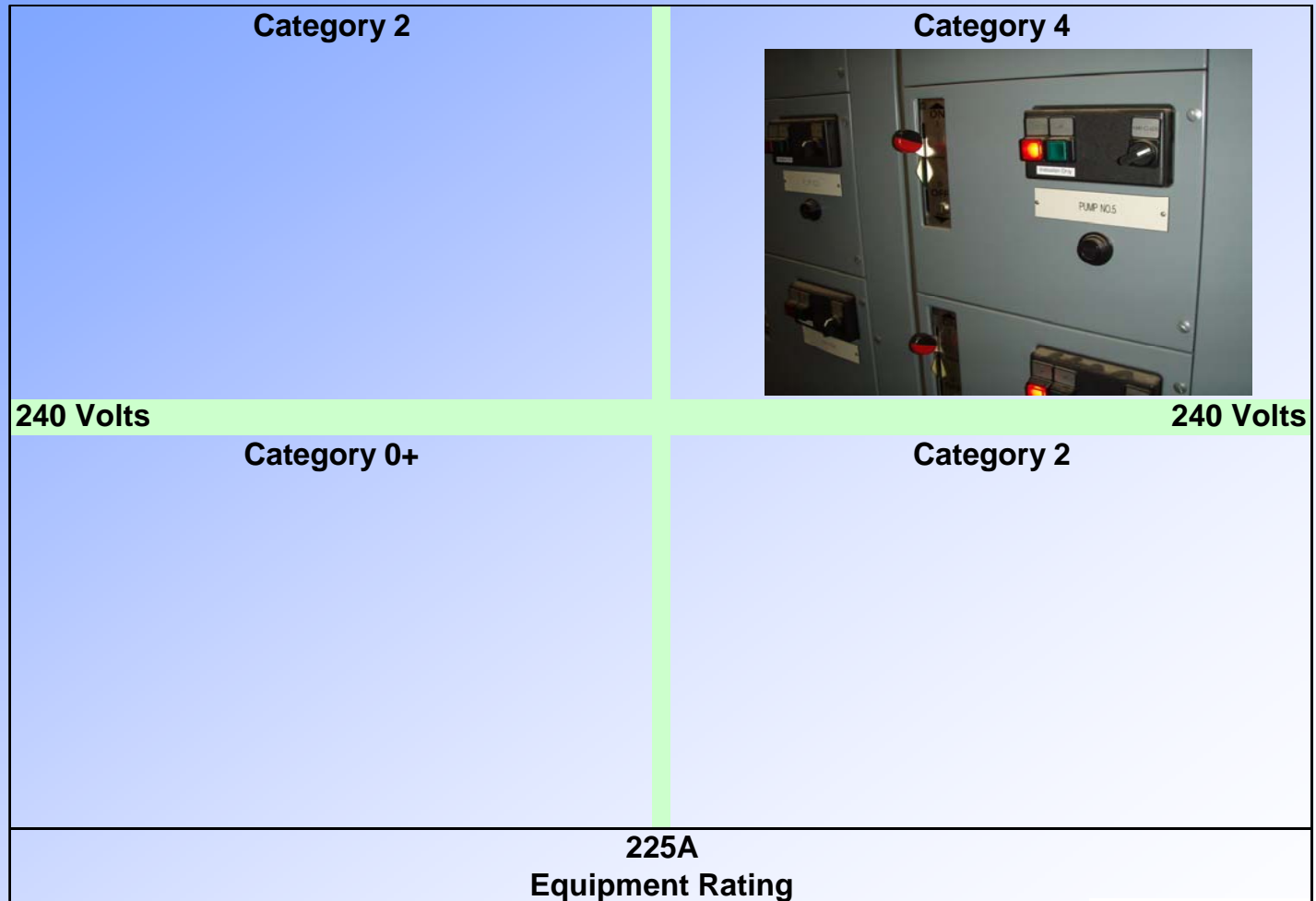
PPE UPDATE

- 480V
- 30A Switch
- 600A MCC



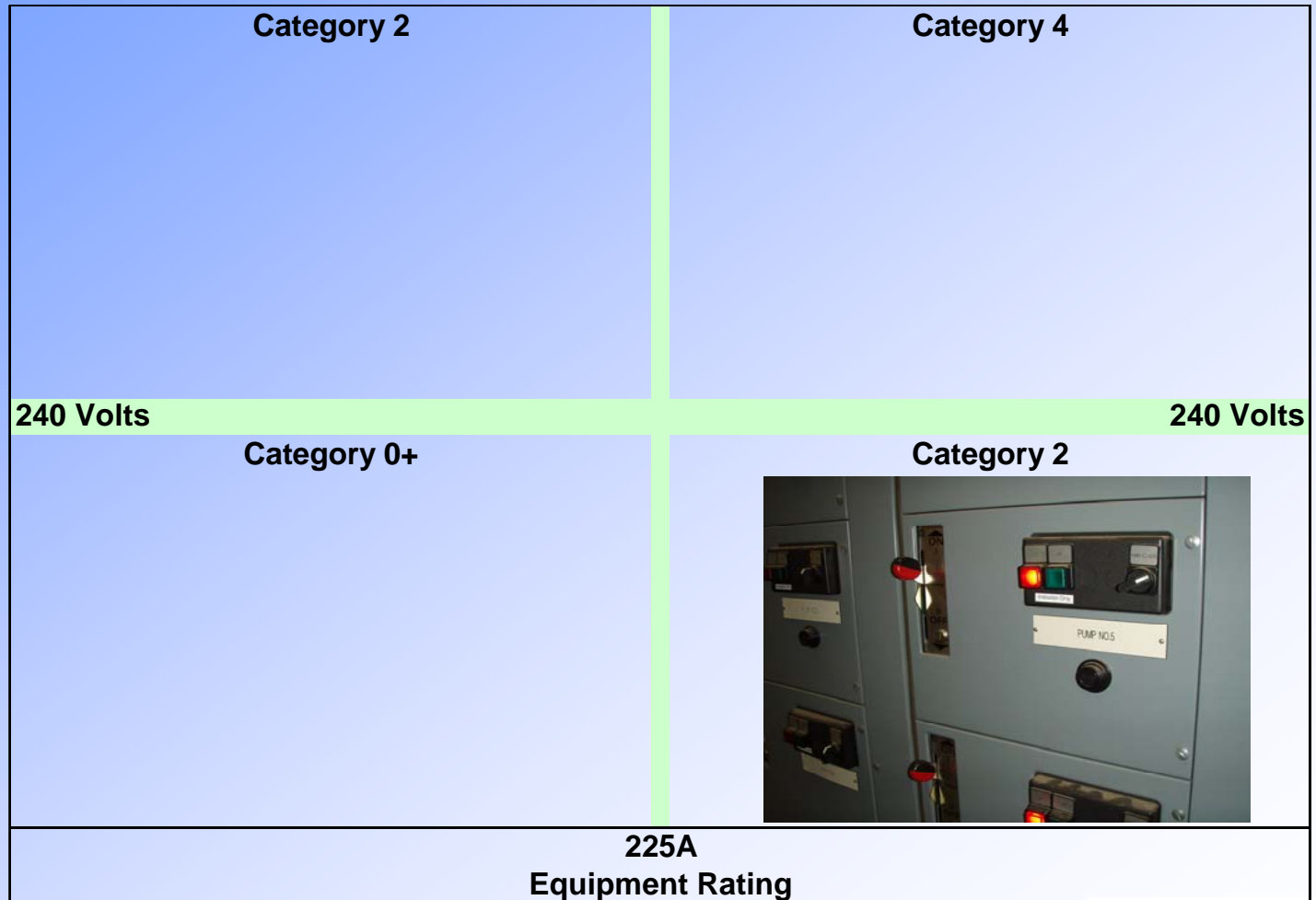
Electrical Safe Work Practices

PPE UPDATE



Electrical Safe Work Practices

PPE UPDATE



Electrical Safe Work Practices *PPE UPDATE*

Receptacles

125V, 30A or less

250V, 30A or less

No PPE required

All the rest follow the switching rules.

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Electrical Safe Work Practices

PPE UPDATE

■ Hazard Category 0+

All clothing shall be non-melting fabric

Long sleeve shirt

Long pants

Leather gloves (leather palm only are acceptable)

Safety glasses with side shields

Electrical Safe Work Practices PPE UPDATE

■ Hazard Category 2 (8 cal/cm^2)

All clothing shall be non-melting fabric and have equivalent rating of 8 cal/cm^2

Long sleeve shirt, long pants, & undergarments

Leather gloves

Safety glasses with side shields

Face shield with hardhat (8 cal/cm^2)

Leather shoes/sneakers

Hearing protection

Electrical Safe Work Practices PPE UPDATE

■ Hazard Category 4 (40 cal/cm²)

All clothing shall be non-melting fabric and have equivalent rating of 40 cal/cm²

Multi-layer flash suit with hardhat and hood

Long sleeve shirt, long pants, & undergarments

Leather gloves

Safety glasses with side shields

Leather shoes/sneakers

Hearing protection

WORKING “ON” or “NEAR”

■ **Considerations**

- Switches and breakers should not be operated if obviously damaged
- Operate with covers closed and secured
- Line cords, plugs, receptacles shall be inspected for signs of damage
- Turn off equipment before connecting or disconnecting
- If the receptacle has a local switch, it shall be utilized

WORKING “ON” or “NEAR”

■ *Voltage Rated Gloves*

- *Class 00*
Rated for 500 Vac
Red or Yellow
(Beige Label)
- *Class 2*
Rated for 15,000 Vac
Red/Black or Yellow/Black
(Yellow Label)



WORKING “ON” or “NEAR”



WORKING “ON” or “NEAR”

■ *Voltage Rated Gloves (cont.)*

- *Must wear leather protector (for specified voltage)*
- *Gap between leather and cuff of glove*
 - *Keep gap clear*
- *Test and inspect before each use*
- *Exchanged every 6 months*

NRTL = APPROVED

■ National Electrical Code –NFPA 70

- Article 110

- **Paragraph 110.2 Approval.** The conductors and equipment required or permitted by this *Code* shall be acceptable only if approved.

- Definitions

- **Approved.** Acceptable to the authority having jurisdiction.
 - **Authority Having Jurisdiction.** The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure.

- Article 110

- **Paragraph 110.3 Examination, Identification, installation and use of Equipment of Equipment.** (8 steps for examination) but in Article 90- **Introduction-** Paragraph 90.7- Examination of equipment for safety- acceptable if done by organization that does inspections.

NRTL = APPROVED

- OSHA
- Welcome to the Nationally Recognized Testing Laboratory (NRTL) Program, which is a part of OSHA's Directorate of Science, Technology, and Medicine. The Program recognizes private sector organizations as NRTLs, and recognition signifies that an organization has met the necessary qualifications specified in the regulations for the Program. The NRTL determines that specific equipment and materials ("products") meet consensus-based standards of safety to provide the assurance, required by OSHA, that these products are safe for use in the U.S. workplace.

NRTL = APPROVED

- Organizations Currently Recognized By OSHA as NRTLs:
- Applied Research Laboratories, Inc. (ARL)
- Canadian Standards Association (CSA)
(also known as CSA International)
- Communication Certification Laboratory, Inc. (CCL)
- Curtis-Straus LLC (CSL)
- Electrical Reliability Services, Inc. (ERS)
(also known as eti Conformity Services and formerly Electro-Test, Inc. (ETI))
- Entela, Inc. (ENT)
- FM Global Technologies LLC (FM)
(also known as FM Approvals and formerly Factory Mutual Research Corporation)
- Intertek Testing Services NA, Inc. (ITSNA)
(formerly ETL)
- MET Laboratories, Inc. (MET)
- NSF International (NSF)
- National Technical Systems, Inc. (NTS)
- SGS U.S. Testing Company, Inc. (SGSUS)
(formerly UST-CA)
- Southwest Research Institute (SWRI)
- TUV America, Inc. (TUVAM)
- TUV Product Services GmbH (TUVPSG)
- TUV Rheinland of North America, Inc. (TUV)
- Underwriters Laboratories Inc. (UL)
- Wyle Laboratories, Inc. (WL)

NRTL = APPROVED

- Does OSHA accept the "CE" mark or accept equipment certified by foreign testing organizations?

The CE mark is unrelated to the requirements for product safety in the US. It is a generic mark used in the European Union (EU) to indicate that a manufacturer has declared that the product meets requirements in the EU for product safety. In the US, under OSHA's NRTL requirements, the product must have the specific mark of one of the NRTLs recognized to test and certify these types of products.